



**Re: (1 of 2) Literature on Mini Frac Tests**

Dmitriy Silin to: Michele Dermer

Cc: George Robin, David Basinger, Nancy Rumrill

Please respond to DSilin

06/23/2010 09:14 PM

Ms Dermer,

The document in file "mini test.pdf" indicates determination of the minimum in-situ stress as the objective of the MFT. From this parameter and Mohr diagram one can determine the hydrofracturing pore pressure. The other two parameters needed are the maximum in-situ stress, which is horizontal for most deep wells and can be determined from the overburden pressure, and the critical shear stress. The hydrofracture plane is orthogonal to the minimum in-situ stress. The fundamental study of this process was conducted at Shell and published by K Hubbert and D. Willis in 1957. Theoretically, once the fracturing pore pressure has been determined, injection at pressures below this threshold does not propagate the fracture initiated during the test. But the devil is usually in the details. A rock-mechanics expertise must be very helpful.

Our discussion is in agreement with your remarks on the sticky notes: the MFT includes fracturing, whereas the SRT does not.

Best regards,

Dmitriy

Dermer.Michele@epamail.epa.gov wrote:

> Dr. Silin,

>

> Yes, thank you so much for your time this afternoon. It was a very good discussion on this topic.

>

> It would be our intent that the data generated from any test be publically available. As you know this is an experimental project and it will be important for the public to see the results of these CCS pilot projects.

>

> But, since we got off the phone, I went back to look at their UIC application and I have attached the description of the tests as originally proposed to EPA about a year ago. (Note the "sticky note" comments I have embedded in the attached - click on the note and the text comment should appear - there are two notes).

>

> At this point it is even more confusing because they seem to have transposed the names of the tests, their purpose, and the pressure and rate associated with conducting each test. At this point I am going to elevate this confusion to my manager and ask how he would like to proceed - either by having the operator explain all this in further written detail with justification, or to reject their request for a mini - whatever test (MWT) or some other alternative.

>

> I have included this for your information.

>

> Sincerely,

>  
> Michele  
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> From: Dmitriy Silin <dsilin@lbl.gov>  
> To: Michele Dermer/R9/USEPA/US@EPA  
> Cc: George Robin/R9/USEPA/US@EPA  
> Date: 06/23/2010 03:52 PM  
> Subject: Re: (1 of 2) Literature on Mini Frac Tests  
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> Michelle,  
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> It was a pleasure to have a discussion with you and Dave. One thing I  
> forgot to mention over the phone, which I would like to mention now: The  
> document you emailed to me requires the operator to report their data  
> analysis within 45 days after the test, but I could not find whether it  
> also requires sharing the test data. Will access to the data be a part  
> of the permit?  
>

> Dmitriy  
>

> Dermer.Michele@epamail.epa.gov wrote:

> > Hello Dr. Silin,  
> >

> > I would very much appreciate a conversation with you on Wednesday this  
> > week. I will be out of the office in the morning, but available in  
> > the afternoon, anytime from 1:30 on. Please let me know what time  
> > would work for you.  
> >

> > George is correct that we are trying to move this permit along so I  
> > would appreciate it if you are able to talk with me this week, even  
> > though George will be out for a very sad occurrence. But you and I  
> > can bring him up to speed when he returns.  
> >

> > As far as the invoicing goes, I am the project officer and all i am  
> > getting is a dollar amount spent with no idea what was done - we can  
> > discuss this a bit when we talk this week, but I would also like to  
> > bring George into the discussion since he is in regular contact with  
> > you.  
> >

> > Sincerely yours,  
> >

> > Michele Dermer  
> >

> > Michele Dermer

> > Environmental Engineer, Underground Injection Control  
> > Water Division, Mail Code WTR-9  
> > U.S. Environmental Protection Agency, Region 9  
> > 75 Hawthorne Street  
> > San Francisco, CA 94105-3901  
> > office (415) 972-3417  
> > fax (415) 947-3545 (include name and mail code)

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> > From: Dmitriy Silin <dsilin@lbl.gov>  
> > To: George Robin/R9/USEPA/US@EPA  
> > Cc: dsilin@lbl.gov, Michele Dermer/R9/USEPA/US@EPA  
> > Date: 06/18/2010 11:36 AM  
> > Subject: Re: (1 of 2) Literature on Mini Frac Tests  
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> >  
> > Hi George,  
> >  
> > Thank you for forwarding the papers. I was at the Goldschmidt  
> > conference. The hotel had a problem with internet connection. I found  
> > that fixing the router is not a process, but it is a state.  
> >  
> > In short, SRT provides an estimate of the FPP by testing the entire  
> > interval. I would expect MFT to give better vertical resolution; that  
> > is, may locate the layer of the most likely fracture opening. I will  
> > have a look at the papers to see how good this vertical resolution could  
> > be. I do not see a conflict between running MFT and SRT. I was involved  
> > in one MFT evaluation, the data came from SLB, though. I do not know  
> > yet how different the SLB's approach is from the Shell's one.  
> >  
> > I will check the papers to have a more intelligent assessment.  
> > I will be out of town Monday, and will get back to work on Tuesday.  
> > Would it be good time to call you on Wednesday?  
> >  
> > Dmitriy  
> >  
> >  
> >  
> > Robin.George@epamail.epa.gov wrote:  
> > > Hi Dmitriy,  
> > >  
> > > These attached papers came from Shell Oil (actually their affiliate  
> > > C6) as supporting information to their request that they run a "Mini  
> > > Frac" test (MFT) in advance of the required Step Rate test (SRT). In  
> > > our latest discussion, their engineers had difficulty describing what  
> > > a MFT was and why it is of advantage over the SRT.  
> > >  
> > > One point the Shell folks make about the advantage of running a MFT is  
> > > that they can measure, observe the fracture closure. Our response was  
> > > that the SRT requirements include observing the ISIP (instantaneous  
> > > shut-in pressure). But they were inclined to say that the ISIP from  
> > > the MFT is .... of better quality or provides better information, etc.  
> > > These papers allude to what they were trying to convey, however our  
> > > SRT requirements seem to include the aspects of the MFT (the papers  
> > > assume that an SRT does not observe the ISIP nor the falloff data).  
> > >  
> > > Aside from semantics, there may be no problem in running both MFT and  
> > > SRT - do you agree?  
> > >  
> > > Next email is the description of how they plan to conduct the MFT.  
> > >  
> > > Michele and I will arrange to have a discussion with you as soon as  
> > > you let us know your availability.

> > >  
> > > George  
> > > 415-972-3532

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> > >  
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> > > ----- Forwarded by George Robin/R9/USEPA/US on 06/16/2010 03:52 PM

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> > > From: Michele Dermer/R9/USEPA/US  
> > > To: George Robin/R9/USEPA/US@EPA  
> > > Date: 06/16/2010 03:51 PM  
> > > Subject: Literature on Mini Frac Tests

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